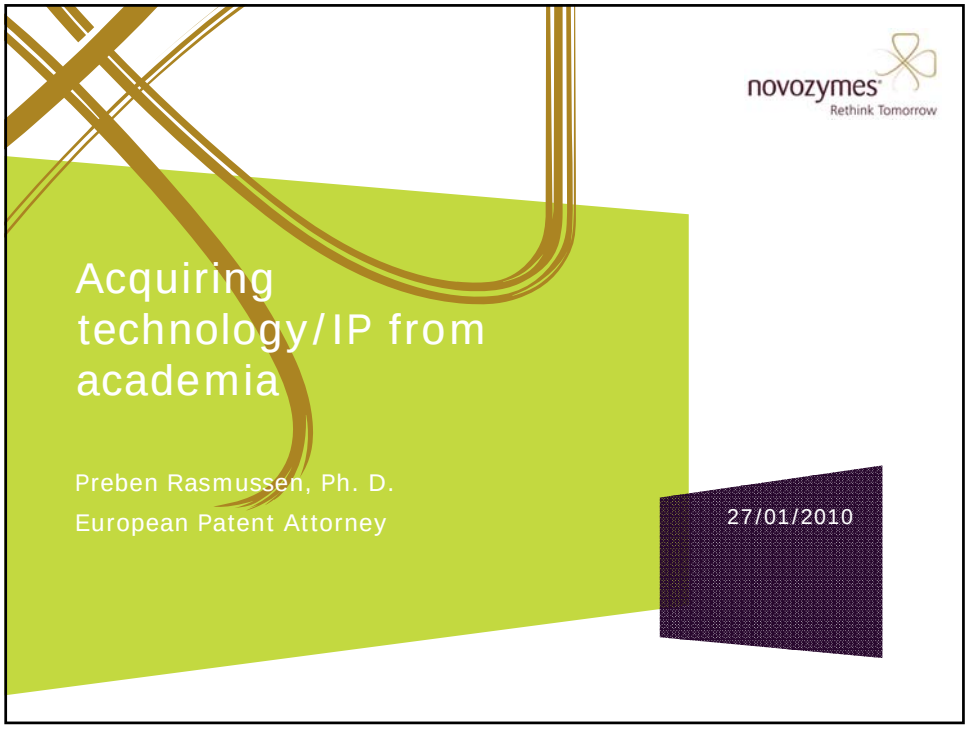

Introduction

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  - Department Manager for BioBusiness-patents –DK
  - Civilingeniør 1988, DTU
  - Ph D 1991, DTU
  - European Patent Attorney 2004
  - Joined Novozymes in 2006

Introduction

- Novozymes is the World leader in Bioinnovation
  - World largest producer of industrial enzymes
  - Provides enzymes, ingredients to biopharmaceutical industry, microorganisms and biosolutions
  - Headquarter in Bagsværd, Denmark
  - Have more than 1,000 patent families
    - (a patent family is a group of patents and patent applications having same priority application)

Acquiring technology /IP from academia

- General schedule
  - Primary contact
    - Often R&D makes first contact
  - Business consideration
    - Do we believe that the technology/IP generates value in our set up?
  - Patent evaluation
    - Performed by inhouse patent attorney
  - Agreement

Primary contact

- We contact academia
  - Contacts via scientific meetings or publications
  - R&D contacting academia
- Academia contacts us
  - R&D evaluates the technology
    - In existing areas
    - Potential for new areas

Initial considerations

- R&D:
  - Does the technology/IP fit into our technology
  - How much R&D effort must we provide to develop the technology/IP to enter the market?
- Business
  - Can we see a business model where the new technology creates a revenue?

Patent evaluation
the application as such

- Evaluating the technology
  - Is the technology patentable?
  - Who has the right to the invention?
- Evaluating an optional patent application
  - Is it valid?
  - Is the application thoroughly drafted?
  - Is the invention broadly examplified?
  - Is the country selection satisfactory for our needs?
  - When was the application filed, and has the technology been published?

Patent evaluation
Freedom to operate

- Freedom to operate analysis
  - Search for third party patent and applications
    - National rights must be considered in each jurisdiction
  - Evaluate retrieved documents
    - Evaluate scope of found patents
    - Evaluate possible scope for identified patent applications
    - Consider validity of found patent rights
  - Conclude
    - We can practise the offered technology
    - We can not practise the technology
      - Can we get license to blocking patent rights?

Agreement

- Acquiring patent rigths
  - Gives us the full control of the technology
- License agreement
  - Exclusive or not
  - May contain prosecution clause
- Co-development agreement
  - Often desirable a for non-mature technology
  - We prefer to patent inventions created during the cooperation

Potential problems Ownership

- Who owns the invention:
  - University
  - students
- Which rights can we get and which rights will the university keep
  - We prefer to have all commercial rights to the invention
  - What can the university do with the technology?
  - Can the university use the technology in cooperations with other parties?

Potential problems
Publications

- Inherent dilemma: Academia wishes to publish; we prefer to wait to publish until the patent application has been published:

- General patenting time line
  - 0 Month – filing of priority application
  - 0-12 Month – optional additional priority applications
  - 12 Months – filing PCT application comprising content of priority applications and added subject matter
  - 18 Months – PCT application is published

Potential problems
Publications

- Consequence of publication:
  - Prior to Priority filing: no valid patent in many jurisdictions
  - 0-12 Months: publication is prior art for subject matter added in PCT application
  - 12-18 Months: we can not withdraw a pending patent application before publication and refile to obtain a later priority date.

- Possible compromise:
  - No publications allowed before filing of PCT application
  - Scientists notify us of an invention and allows us 2-6 months to file patent application covering the invention whereafter it can be published

Potential problems valuation of an invention

- The value of an invention depend on the additional revenue generated by implementing the invention
- The value of an invention depends on many factors including:
  - Revenue of expected sale
  - Maturity of invention
  - Time to marketing
  - Likelihood of succes

Value of an invention

- Revenue
  - New market
    - Sale expectations based on market analysis and business models
    - High costs connected with developping new market
    - High risk
  - Existing market
    - Sales expectations based on known market size
    - Lost sale of existing products
    - Lower risk
  - New process
    - Cost reduction can be calculated based on existing sales

Value of an invention
Maturity of an invention

- We practically never find technology ready to be marketed
- Before marketing we need to do additional research/development:
  - Expression studies
  - Production
  - Application studies
- The value depends on how much research/development we must do before the technology can be marketed.

Value of an invention
Other considerations

- Time to commercialization
- Likelihood of success
- These factors may affect the value or the structure of payment for an invention

Structure of payments

- Up-front payment
  - Less attractive if the likelihood of success is low or the time until commercialization is long
- Milestone payments
  - Specified payments when certain technocal or commercial goals are achieved such as expression in microorganism, registration of product, first commercial sale
  - Attractive if technical challenges are foreseen
- Royalty
  - e.g. payment of a percentage of sale

Questions?